



Climate variability and nonstationary dynamics of mycoplasma pneumoniae pneumonia in Japan

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Abstract:

Background: A stationary association between climate factors and epidemics of *Mycoplasma pneumoniae* (*M. pneumoniae*) pneumonia has been widely assumed. However, it is unclear whether elements of the local climate that are relevant to *M. pneumoniae* pneumonia transmission have stationary signatures of climate factors on their dynamics over different time scales. **Methods:** We performed a cross-wavelet coherency analysis to assess the patterns of association between monthly *M. pneumoniae* cases in Fukuoka, Japan, from 2000 to 2012 and indices for the Indian Ocean Dipole (IOD) and El Niño Southern Oscillation (ENSO). **Results:** Monthly *M. pneumoniae* cases were strongly associated with the dynamics of both the IOD and ENSO for the 1-2-year periodic mode in 2005-2007 and 2010-2011. This association was non-stationary and appeared to have a major influence on the synchrony of *M. pneumoniae* epidemics. **Conclusions:** Our results call for the consideration of non-stationary, possibly non-linear, patterns of association between *M. pneumoniae* cases and climatic factors in early warning systems.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

El Nino Southern Oscillation, Meteorological Factors, Meteorological Factors, Temperature, Other Exposure

Temperature: Fluctuations

Other Exposure: Indian Ocean Dipole; cloud cover

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Climate Change and Human Health Literature Portal

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Japan

Health Impact: ☐

specification of health effect or disease related to climate change exposure

Respiratory Effect

Respiratory Effect: Bronchitis/Pneumonia

Resource Type: ☐

format or standard characteristic of resource

Research Article

Timescale: ☐

time period studied

Time Scale Unspecified